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This study investigates the viability of parallel warfare as a strategy for the future. After Desert Storm, much controversy was generated over the use of airpower and whether that use could be repeated in another theater. Parallel warfare is the application of combat power simultaneously at the strategic, operational, and tactical levels of war to effect paralysis on the enemy's ability to function. It can reduce the time and manpower invested in a conflict. The study begins with an analysis of the methods employed in Desert Storm to develop a baseline measurement for further analysis. Next, a major theater war scenario on the Korean peninsula and a small scale conflict, such as the Balkans, are examined to determine if parallel warfare is achievable. It is suggested that parallel warfare is a viable strategy for the future, yet it does have some limits with respect to the sophistication and size of the enemy.

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A thesis presented to the Faculty of the U.S. Army
Command and General Staff College in partial
fulfillment of the requirements for the
degree

MASTER OF MILITARY ART AND SCIENCE

by

STEVEN M. SCHNEIDER, MAJ, USAF
B.S., U.S. Air Force Academy, Colorado Springs, Colorado, 1985

Fort Leavenworth, Kansas
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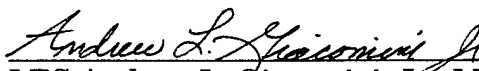
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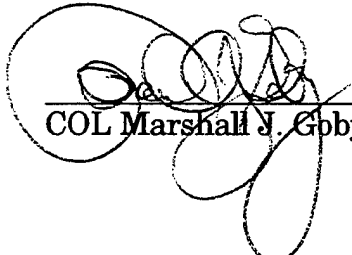
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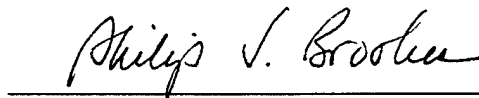
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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

PARALLEL WARFARE: A STRATEGY FOR THE FUTURE by MAJ Steven M. Schneider, USAF, 78 pages.

This study investigates the viability of parallel warfare as a strategy for the future. After Desert Storm, much controversy was generated over the use of airpower and whether that use could be repeated in another theater.

Parallel warfare is the application of combat power simultaneously at the strategic, operational, and tactical levels of war to effect paralysis on the enemy's ability to function. It can reduce the time and manpower invested in a conflict.

The study begins with an analysis of the methods employed in Desert Storm to develop a baseline measurement for further analysis. Next, a major theater war scenario on the Korean peninsula and a small scale conflict, such as the Balkans, are examined to determine if parallel warfare is achievable. It is suggested that parallel warfare is a viable strategy for the future, yet it does have some limits with respect to the sophistication and size of the enemy.

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LIST OF ACRONYMS

AAA	Anti Aircraft Artillery
ADOC	Air Defense Operations Center
AFDD	Air Force Doctrine Document
AI	Air Interdiction
ALCM	Air Launched Cruise Missile
AWACS	Airborne Warning and Control System
BDA	Battle Damage Assessment
BDA	Battle Damage Assessment
C ²	Command and Control
C ³	Command, Control, and Communication
CAS	Close Air Support
CENTCOM	Central Command
CINC	Commander in Chief
CINCCENTCOM	Commander in Chief, Central Command
CW	Chemical Warfare
DMZ	Demilitarized Zone
DPRK	Democratic Peoples Republic of Korea (North Korea)
FM	Field Manual
GPS	Global Positioning System
HARM	High Speed Anti-Radiation Missile
HUMINT	Human Intelligence
IADS	Integrated Air Defense System
IOC	Intercept Operations Center
JDAM	Joint Direct Attack Munition

JFACC	Joint Force Air Component Commander
JP	Joint Publication
JSOW	Joint Stand-Off Weapon
LANTIRN	Low Altitude Navigation, Targeting, Infra Red, Night
LGB	Laser Guided Bomb
MAS	Master Of Aeronautical Science
MCM	Major Command Manual
MM	Millimeter
MMAS	Master of Military Art and Science
MRC	Major Regional Conflict
MTW	Major Theater War
NBC	Nuclear, Biological, and Chemical
NM	Nautical Mile (6000 feet)
OODA	Observe, Orient, Detect, Assess
PGM	Precision Guided Munition
PSYOPS	Psychological Operations
ROK	Republic of Korea (South Korea)
SAM	Surface to Air Missile
SAMS	School of Advanced Military Studies
SEAD	Suppression of Enemy Air Defenses
SFW	Sensor Fuzed Weapon
SOC	Sector Operating Center
SOF	Special Operations Forces
TLAM	Tomahawk Land Attack Missiles
US	United States
USA	United States Army

USAF	United States Air Force
USMC	United States Marine Corps
USN	United States Navy

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CHAPTER 1

INTRODUCTION

Background

The Gulf War of 1991 was one of the most successful military campaigns in United States history. Since the war, the strategy guiding the employment of air and land forces has been examined, dissected, and debated. The near surgical use of airpower has received credit for preparing the way for a low cost ground campaign, while generating vigorous discussion of the future of airpower.

The blueprint for the air campaign encompassed a new strategy: Parallel Warfare. Parallel warfare is defined as the simultaneous application of force (in time, space, and at each level of war--strategic, operational, and tactical) against key systems to effect paralysis on the subject organization's ability to function as it desires.¹ The objective of parallel warfare is control of the opponents strategic activity. The force used is not necessarily airpower, it can be any means, lethal or nonlethal.

THESIS QUESTION

Is parallel warfare a viable strategy for the future, or was it a one time tactic used in Desert Storm?

Specifically, this thesis will address parallel warfare as it may apply in the future and examine closely whether parallel war was a one time aberration in Desert Storm, or a first example of a new and viable strategy. In answering the question the thesis will examine whether parallel warfare is achievable

with today's forces, its correctness in relation to doctrine, and its applicability to future postulated major theater war scenarios, and lower scale conflicts.

What is parallel warfare?

Parallel warfare was applied during the air campaign in Desert Storm, although not widely known under that name at the time. It was only after the war that the term parallel warfare was used publicly to describe the coalition air campaign strategy. In the Gulf War, airpower simultaneously attacked strategic targets, such as Saddam Hussein's chemical weapons factories, operational targets of command and control nodes, and tactical targets, such as aircraft shelters and tanks. The importance of parallel warfare, if successful, is that a force can significantly degrade or paralyze an opponent's ability to fight with reduced or no risk to friendly forces. It allows a force to isolate enemy elements and render them ineffective, while **simultaneously** destroying the enemy capability to continue the fight.

A useful analogy to help illustrate this concept is the starfish. Destroying a leg of the starfish does not kill it, the leg simply grows back over time. Destroy the center, and the starfish dies. Cut off the legs, and continue to cut them off each time they attempt to grow back, and the starfish dies. Likewise, cut off peripheral forces or weapons of an enemy, and they are gradually replaced. Cut off the source controlling those forces or supplies, or continually strike the important peripheral points, and they die off. This is a significant strategy that could allow a force to quickly and cheaply deal with conflict.

The writings of Clausewitz describe the concept of center of gravity as the hub around which all activity revolves. His point is that a force will be victorious if it is able to destroy the opponent's center of gravity. U.S. Joint, Air Force, and Army doctrine also embrace the concept of center of gravity. Joint Publication (JP) 1 defines the center of gravity as, "That characteristic, or locality from which a military force, nation, or alliance derives its freedom of action, physical strength, or will to fight."² In FM 100-5, the capstone Army doctrinal publication, centers of gravity are described as the key to victory. Leading to the center of gravity are decisive points. The Army describes these as "the keys to getting at the centers of gravity."³

Prior to Desert Storm, warfare was fought using a serial approach, as illustrated in figure 1. While forces frequently identified enemy decisive points and centers of gravity, they lacked the means to strike at them without first passing through the defenses layered between those points and the friendly forces.

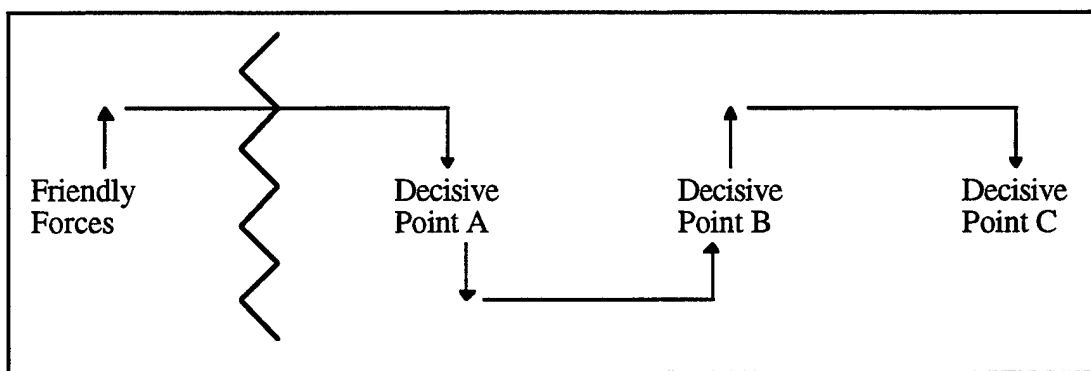


Figure 1. Serial Warfare Model

Airpower theorists recognized early on that airpower had a unique ability to bypass fielded forces and strike at the decisive points without having to waste time, resources, or manpower on defenses in front of the decisive points. Unfortunately, airpower generally did not possess the accuracy required to destroy critical points and required huge numbers of assets to achieve success. As a result, there just were not enough airpower assets to actually create paralysis, because the enemy had enough time to recover before a subsequent attack could be launched.

Technology improved over time, and Vietnam saw the first use of precision-guided munitions (PGMs) on a large scale. In Vietnam a bridge that escaped destruction for several years, at an inestimable cost in terms of resources, fell to one well-placed laser-guided bomb. In Desert Storm, the military not only possessed significant quantities of laser-guided bombs, but also air- and surface-launched guided missiles. A new approach to striking decisive points and centers of gravity was possible. Striking those points simultaneously and repeatedly could achieve synergistic effects and paralyze the enemy (see figure 2).

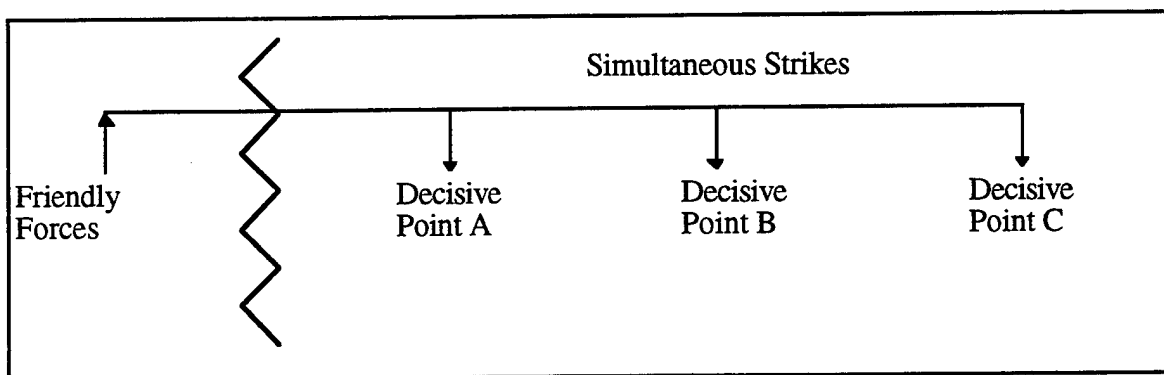


Figure 2. Parallel Warfare Model

These precision weapons finally brought to airpower the ability to execute the theories of visionaries from the last eighty years. Now, the U.S. possessed the ability to attack decisive points at all levels of war, within a small enough timespan that the enemy did not have time to recover before he was defeated. This is parallel warfare.

Thesis Subquestions

There are several questions that must be answered in order to answer the thesis question. Is parallel warfare consistent with current and emerging military doctrine? Is parallel warfare achievable with today's force structure? Is parallel warfare applicable in scenarios other than Desert Storm, specifically a war in Korea, or a small regional conflict, such as the Balkans? Finally, is parallel warfare useful as an overall strategy in terms of cost and time? In answering these questions, a case may be built that will support or refute the primary thesis question and identify any areas for further study.

The U.S. military that existed in 1990-1991 was much larger than the force in existence today. The ability to properly execute parallel war is not guaranteed and is a significant question that must be answered before the viability of the strategy can be addressed. The number of delivery platforms has decreased, while the accuracy of those remaining has increased. Weather had a significant negative impact during Desert Storm, and its ability to hinder future operations will be examined. In addition, accurate intelligence is required for parallel warfare to be successful. The ability of a coalition, with the United States as a member, to gain necessary information will be addressed. Once

achievability is answered, correctness with respect to doctrine will be examined.

Military doctrine has undergone many changes since Desert Storm. Joint doctrine is more defined and encompasses a larger area. Air Force doctrine has progressed from the days of simply following along behind another service and now stands on its own. Joint Vision 2010 laid the foundation for United States operations as a whole. The Air Force has evolved its doctrine to complement Joint Vision 2010, into a strategy known as Global Engagement. For parallel warfare to be a viable strategy, it must be compatible with Air Force and joint doctrine. The applicability and interoperability of parallel warfare will be key to its usefulness.

Desert Storm was a war fought in excellent conditions, with terrain very favorable to the attacker. There were few places to hide, and camouflage was difficult. Movement meant discovery. However, other theaters that the United States postulates may flare up into another Major Theater War (MTW) and have different terrain characteristics. The thesis will examine the applicability and achievability of parallel warfare to other theaters, specifically another war in the Middle East or a war in Korea. In addition, a smaller regional contingency will be examined to assess applicability on a lesser scale.

Important Definitions

The following definitions will apply throughout this paper:

Air interdiction (AI). "Air operations conducted to destroy, neutralize, or delay the enemy's military potential before it can be brought to bear effectively

against friendly forces at such distance from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is not required.”⁴

Air superiority. “That degree of dominance in the air battle of one force over another which permits the conduct of operations by the former and its related land, sea, and air forces at a given time and place without prohibitive interference by the opposing force.”⁵

Air supremacy. “That degree of air superiority wherein the opposing air force is incapable of effective interference.”⁶

Antiaircraft artillery (AAA). Artillery whose primary purpose is the destruction of fixed wing or rotary wing aircraft. AAA may be radar or optically guided, and ranges from small arms to 57 millimeter.

Integrated air defense system (IADS). The combination of command and control, antiaircraft artillery, surface to air missile systems, detection systems, and aircraft designed to detect and destroy air forces.

Suppression of enemy air defenses (SEAD). “That activity which neutralizes, destroys, or temporarily degrades surface-based enemy air defenses by destructive and/or disruptive means.”⁷

Constraints and Assumptions

First and foremost this will be an unclassified study. Weapons capabilities and effects, probability of kill criteria, and other facts will be derived from unclassified resources. This should not taint the conclusion since both friendly and enemy capabilities will be similarly affected.

The doctrine of each of the services is undergoing major revision. This thesis will be based primarily on concrete current doctrine, but will include emerging doctrine where it is apparent that doctrine is not going to change prior to final printing. The applicability of the thesis analysis should not be significantly affected.

The thesis will examine parallel warfare, as it applies to the present and the next several years, to a major theater war other than the Gulf, and to a small regional conflict. This will keep the study relevant to real capabilities and tactics and prevent it from dealing in the abstract and unknown future.

As already mentioned, the thesis intends to focus primarily on airpower and its ability to conduct parallel warfare. The ability of other methods to conduct or contribute will be addressed, but not deeply examined. Future capabilities not yet in existence or postulated in the next decade will not be used. Lastly, Marine Corps airpower will not be considered. This is due to the current agreement between the Air Force and the Marines which states that Marine Air belongs to the Marine ground commander, and he will release any extra sorties to the Joint Force Commander. The lack of subjugation of Marine Air to the Joint Force Commander means it cannot be counted as available.

Significance of the Study

The significance of this research is that parallel warfare, when applied correctly, has the potential to significantly reduce the cost of war. It can minimize the number of lives placed at risk, the amount of resources expended, and the time invested. The threat of parallel war itself may be enough to

secure a nation's interests without placing any lives at risk. Parallel warfare could completely revolutionize the way war is fought.

¹ Colonel David Deptula, "Firing for Effect: Change in the Nature of Warfare," (Arlington, VA: Aerospace Education Foundation, 1995), 5.

² U.S. Joint Chiefs of Staff, Joint Pub 1, Joint Warfare of the Armed Forces of the United States (Washington, DC: Department of Defense, 1995), III-8.

³ U.S. Army, Field Manual 100-5, Operations, (Washington, DC: Department of the Army, 1993), 6-8.

⁴ U.S. Joint Chiefs of Staff, Joint Pub 1-02, Department of Defense Dictionary of Military and Associated Terms (Washington, DC: Department of Defense, 1994), 24.

⁵ Ibid., 30.

⁶ Ibid., 31.

⁷ Ibid., 18.

CHAPTER 2

LITERATURE REVIEW

Introduction

This chapter will summarize the current research and information as it relates to the topic of parallel warfare. The interested researcher must first understand that parallel warfare is a controversial subject, especially within the military itself. Currently, airpower possesses the preponderance of means to conduct parallel warfare, thus the concept lends support to Air Force budget requests. As a result, other services tend to be cynical of parallel warfare due to the perceived threat it poses to their share of the budget. This fundamental conflict impacts on the majority of documents available from either service or joint sources.

Any discussion of military strategy must start with the basis of all military action--Joint Doctrine. Joint doctrine provides a common perspective for planning and employing military forces. The primary failing of joint doctrine is that it must be acceptable to all the services, in effect be "politically correct." Therefore, joint doctrine is unable to be revolutionary or proactive, rather it is reactive and a reflection of already agreed upon service doctrine. Subordinate to joint doctrine is service doctrine. Service doctrine provides general guidance from which services derive tactics and procedures. The services are not constrained, as joint doctrine is, in developing doctrine, thus they tend to be more revolutionary, timely, and proactive. A review of joint and

service doctrine will demonstrate how the U.S. military may be expected to employ parallel warfare, or not, as the case may be.

With Desert Storm several years past, numerous books and studies are available. They provide a wealth of historical information and concrete data on the use of parallel warfare in action. However, direct application of much of this information to the thesis question may not be possible depending on the focus from which the information was gained or written. For the most part these sources are informative. Other sources are informative and also devote a portion to an argumentative discussion of the merits of air warfare as practiced in Desert Storm.

These sources fall into three general categories. Sources sponsored by the Air Force tend to argue and support parallel warfare in favor of its use, since parallel warfare naturally relies on airpower. Sources sponsored by other services tend to discount parallel warfare as a useful strategy to protect their services' own capabilities. Lastly, sources written independent of the military tend to be more objective and provide a somewhat more credible basis for truly assessing parallel warfare as it was used in the past and utility for the future.

For the military researcher, Master of Military Art and Science (MMAS) and Master of Aeronautical Science (MAS) theses, and monographs from the various military colleges provide excellent sources of research on military topics. Similar to the many books and in-depth studies of the application of air warfare, these sources may not be directly applicable to the current research. These unpublished works will be examined and will lead the transition to published articles in professional journals.

Professional journals provide the most current information and viewpoints on a host of topics. Articles in military journals, similar to books and studies, tend to be more informative, occasionally argumentative, but not necessarily for the service sponsoring the journal. Rather, these articles tend to reflect a bias for the author's service. Other journals and professional forums are often more argumentative in nature, providing a somewhat more objective and useful point of view with reference to current and future uses of military power.

This review of the literature concerning the application of parallel warfare is not exhaustive, but does include a large portion of the major works available on the subject. Prior to Desert Storm, parallel warfare is discussed only on a theoretical basis, and then under different names. The intent of this literature review is to provide the background necessary to understand the current state of information on the topic of parallel warfare and to provide a starting point for the researcher who desires more information.

Joint Doctrine

The foundation of joint doctrine is laid by three publications: Joint Publication (JP) 1, Joint Warfare of the Armed Forces of the United States; Joint Publication (JP) 0-2, Unified Action Armed Forces (UAAF); and Joint Publication (JP) 3-0, Doctrine for Joint Operations. These joint publications delineate the organization of joint forces and the structure for their employment. Joint Publication (JP) 1-02, Department of Defense Dictionary of Military and Associated Terms, provides definitions of joint and military

terminology and is necessary for any researcher studying or referring to joint or other military operations.

Joint Publication (JP) 3-0, Doctrine for Joint Operations, provides fundamental principles and doctrine for the conduct of joint and multinational operations. As such, it deals primarily with concepts and ideals of joint warfare, leaving the specifics to further documents within the JP 3-(X) series. Within JP 3-0 itself, several concepts applicable to airpower and parallel warfare are brought forth as basic goals of military forces.

Joint Publication (JP) 3-03, Doctrine for Joint Interdiction Operations, provides the “guidance necessary to conceptualize, plan, coordinate, and conduct successful joint interdiction operations throughout the range of military operations.”¹ As such, JP 3-03 is the doctrine publication that covers the implementation of parallel warfare, but does not go so far as to actually use “parallel warfare” as a specific term. Instead, it discusses general ideas of interdiction, and touches on some of the possible achievements of parallel warfare while avoiding wholesale endorsement of it for reasons mentioned in the introduction.

Joint doctrine provides the overarching principles that guide the conduct of military operations. It provides the structure of organizations, guidelines for planning, and general concepts to assist in construction of operations. However, for reasons stated earlier, it requires large momentum, or a preponderance of service doctrine, to evolve. Thus, the utility of parallel warfare relies on meeting the current doctrine, while providing evidence to help joint doctrine evolve.

Service Doctrine

Since airpower provides the historical example of parallel warfare, and the preponderance of the means to conduct parallel warfare, United States Air Force doctrine provides the majority of service doctrine applicable to the topic. Air Force Doctrine Document (AFDD) 1, Basic Aerospace Doctrine of the United States Air Force, provides the overarching view of the organization and employment of airpower. It describes the characteristics of airpower, how they relate to the principles of war, and integrate in a joint environment. Air Force Doctrine Document (AFDD) 2 DRAFT, Global Engagement: Air and Space Power Organization and Employment, explains the actual organization and employment aspects of airpower, as well as describing the capabilities.

The remainder of Air Force doctrine, currently contained in the Major Command Manual (MCM) 3-(X) series, is classified and deals with the specific tactical employment of air forces. These documents will not be included in this thesis because of their classification, but the researcher wanting to investigate parallel warfare of airpower on a more detailed tactical level should consider these sources. The Air Force is currently developing a doctrine structure somewhat similar to the current Army structure, and in the future a researcher can expect to find more Air Force-sponsored sources between AFDD-1 and the MCM 3-X series.

Since parallel warfare involves the strategic deep operations, operational deep, and even tactical deep operations of the military force, it is important to include consideration of other services doctrine as it relates to deep operations. While none of these documents specifically address parallel

warfare, their discussion of deep operations, and the goals they wish to achieve, are in harmony with those of parallel warfare.

The Army defines deep operations in Army Field Manual (FM) 100-5, Operations. This document lays the foundation for deep operations, and the goals it should achieve, which are then covered more specifically in Army Field Manual (FM) 100-15, Corps Operations. FM 100-15, with subordinate tactics manuals and unit standard operating procedures, discusses deep operations and its goals primarily on the near operational and tactical level from the Army's point of view. This overlaps with the abilities of parallel warfare, and it is necessary to examine all these areas in answering the thesis question.

Service doctrine and manuals provide the more specific "nuts and bolts" of the conduct of war. While the Air Force endorses parallel warfare, the other services are careful not to do so in an overt manner. Rather, they cover deep operations as it applies to themselves, yet this indirectly supports, complements, and endorses parallel warfare.

Books and Studies

As with any significant use of military force throughout history, Desert Storm has spawned numerous books and studies examining the conduct of the war from all perspectives. There is no shortage of information or opinion on the use of airpower in the Gulf War. In addition, the basic concepts of parallel warfare have been debated ever since the airplane was invented and the first bomb dropped.

For the serious student or researcher of parallel warfare, or airpower in general and its uses, the writings of the major airpower theorists must be considered. Giulio Douhet first discussed uses of airpower that provide the basis for parallel warfare ideas when he wrote about bypassing fielded forces and attacking the enemy's heartland in his book, Command of the Air. Alfred F. Hurley discussed the revolutionary theories of Major William Mitchell in Billy Mitchell: Crusader for Airpower. Other basic sources are Air Power and Armies, by J. C. Slessor, and the writings of the Air Corps Tactical School (ACTS) in the 1930s.

Air Interdiction In World War II, Korea, and Vietnam, a USAF Warrior study, is a record of an Air Force-sponsored interview with three former leaders, each from successive periods throughout the Air Force evolution. General Earle E. Partridge, (World War 2), General Jacob E. Smart (Korea), and General John W. Vogt Jr. (Vietnam), discuss the use of the Air Force during their time and the design of air campaigns and objectives. In addition, they discuss the failings and shortcomings of those campaigns.

Prior to Desert Storm, the major volume written on the theory of parallel warfare was The Air Campaign: Planning for Combat, by Colonel John Warden. In his book, Warden draws on the theories of the past and ties them into the capabilities of the present, as they were in the late 1980s. He explains how to consider the enemy with respect to targets at all levels of war and how the air campaign should be structured to target those systems through the use of parallel warfare. This book is the most important theoretical work on the subject written to date.

With respect to Desert Storm, there are several accounts depicting the conduct of the air war. Thunder and Lightning: Desert Storm and the Airpower Debates by Edward Mann, attempts to dissect the campaign after the fact, and explain what the goals of the air campaign were. It discusses the development of the air campaign, and explains the changes in attitudes that were required to implement this new method of warfare. Decisive Force: Strategic Bombing in the Gulf War, by Richard Davis, similarly examines the air campaign after the fact. It provides specifics on aircraft and systems used to conduct the war, avoiding an argumentative position. As such, it is primarily a factual study of the war. The Eagle in the Desert by William Head and Earl H. Tilford, Jr., is a collection of essays on the Gulf war. These essays discuss the planning, objectives, methods, and results, as well as debate the various facets of the Gulf war. It is a valuable and somewhat more objective testimony of parallel warfare in action.

An important work on the use of airpower outside of war is the RAND corporation study, Preparing the U.S. Air Force for Military Operations Other Than War, by Alan Vick, and others. With nations capable of mustering large forces few and far between, the military finds itself increasingly involved in small scale conflicts. This study is a forward looking document that examines the use of airpower in the past while providing ideas on how to best use it in the future.

These books and studies are representative of those available to the researcher. While some are primarily factual, for the most part they all use

historical data in arguments either for or against parallel warfare as a strategy for the future.

Unpublished Theses and Monographs

Numerous unpublished papers produced by various military schools, officers, and individuals are available on the subject of parallel warfare and the use of airpower in general. There is little written on the utility of parallel warfare in the future.

Two papers are significant in providing an explanation for what really constitutes parallel warfare. Colonel John Warden's "The Enemy as a System" and Lieutenant Colonel David Deptula's "Firing for Effect: Change in the Nature of Warfare" are the keystone works that take the theories of the past and apply them to the present and future. Warden concentrates on the theoretical support for parallel warfare, while Deptula expands the theoretical with historical evidence from Desert Storm. As the architects of the Gulf War air campaign, these two men are uniquely able to explain parallel warfare.

The con side of parallel warfare is presented in a monograph by Major Kurtis D. Lohide. "Desert Storm's Siren Song" examines parallel warfare in a historical context with respect to other revolutions in military warfare. Major Lohide uses these historical examples to caution against embracing parallel warfare without further corroborating evidence.

In answering a thesis question that seeks to look in the future, the researcher must provide a basis for that future war. Future war is a difficult subject, as it relies on what is effectively guesswork. On the unclassified level,

several papers deal with war as it may occur in North Korea. These papers all cover the author's prediction of how the North would conduct a war, the avenues of approach and forces used, and the objectives the North would seek to achieve. Of these works, some of the more useful are "Air Campaign for a Second Korea War: A Strategy For Attacking the Centers of Gravity," by Charles O. Sylling, and "North Korea: Considerations for Going to War and the Use of Weapons of Mass Destruction." Both works cover the systems of North Korea and how an air campaign should be structured in war.

Articles in Professional Journals

Professional journals provide the researcher with the most current thought available on a subject. However, the researcher must remember that journals sponsored by a particular service tend to publish articles supporting that service's agenda or point of view, and as such may be biased. Articles in civilian journals tend to be more objective, yet the researcher must be careful to examine the agenda of the organization sponsoring the journal. Despite these possible shortcomings, journals do provide valuable information for the researcher.

Airpower Journal, published by the Air Force's Air University, is an excellent source of military thought on the uses of airpower. Articles on all sides of the issues authored by airmen and others are available. An excellent article on the use of the Air Force in peace operations is "Airpower and Peace Enforcement," by James S. Corum. Corum reviews uses of airpower as a

coercive tool in the past in Somalia, Haiti, and the former Yugoslavia, and discusses how it can be used in the future.

Jane's Intelligence Review provides excellent information on the current state of military forces, and the nations that host them, often uncovering very sensitive or even classified information. Military Review, while an Army publication, occasionally hosts articles that impact on the use of airpower, often in a context of control and limitations as the Army seeks to extend its influence on the battlefield.

Professional journals contain very little discussion on parallel warfare itself, but do have numerous articles with arguments that touch on the capabilities of parallel warfare. The researcher simply needs to define the aspect from which to examine warfare to examine warfare from, and then narrow the search to articles relevant to the discussion.

Summary

Current doctrine was examined to see if it adequately described parallel warfare and the methods to conduct it. While discussion of the underlying concepts exists, current doctrine does not wrap them under the term "Parallel Warfare." Doctrine does, however, support parallel warfare as a possible means to conduct war.

With the large number of books, studies, papers, and articles, there is sufficient information to examine the utility of parallel warfare as a strategy for the future. Some of the material discusses the concept in broad strokes, while others use specific historical examples to argue the viability of parallel

warfare. There has yet to be a comprehensive study of the future conduct of parallel war at the unclassified level, and this thesis will attempt to fill a portion of that gap.

¹ U.S. Joint Chiefs of Staff, Joint Pub 3-03, Doctrine for Joint Interdiction Operations (Washington, DC: Department of Defense, 1997), i.

CHAPTER 3

METHODOLOGY

Examination of the literature shows that, unlike a conventional attack against one target, parallel warfare does not have a cookbook method to determine its effects. Parallel warfare is a more abstract concept. Damage assessment of enemy systems is less concrete than for an attack on a specific visible target. Parallel warfare requires a large amount of intelligence information on enemy systems and interrelationships, and assumptions about synergistic affects of targeting those systems.

In order to answer the thesis question, a structured, sequential approach will be followed. First, a standard for parallel warfare will be determined. Next, the current force structure will be analyzed to determine its capabilities. The thesis will then examine two scenarios, applying the concept of parallel warfare considering each scenario. Throughout the examination, the conduct of parallel war will be applied to current doctrine to ensure correctness. Lastly, the ability of parallel warfare to achieve success will be explored, and shortfalls determined. This methodology should provide a logical and complete progression of data culminating in a satisfactory resolution of the thesis question.

Parallel warfare, as a relatively new strategy and one that seeks to strike targets less tangible than an aircraft bunker, is not easily assessable. Unlike normal bomb damage assessment, the effects of parallel warfare are not always tangible and easily seen. The first step in this research will be to

determine the requirements for successful parallel warfare. Parallel warfare requires a significant amount of intelligence before implementation. Enemy systems and interaction between those systems must be identified. The value of each system to the enemy, as well as the value of interaction between the systems, is also important to determine. Since parallel warfare seeks to exploit the interaction of systems by attacking part to affect the whole, the ability to locate and target the appropriate piece must be determined.

Obviously, if the necessary target cannot be attacked, an alternate must be available. If not, then parallel warfare is unachievable. Additionally, enough targets must be hit in a short enough time period to ensure the enemy does not have sufficient time to recover and bypass affected areas. If too few assets exist to meet the required timeline, parallel warfare is unachievable. All these items will be used to define the standard against which parallel warfare will be measured.

The current force structure possesses a finite number of delivery platforms and weapons, along with associated Suppression of Enemy Air Defenses (SEAD) and Battle Damage Assessment (BDA) assets. This force has a capability to strike and destroy a finite number of targets per mission flown. U.S. policy currently requires the military to be capable of fighting two major regional conflicts that occur near simultaneously, that is with a small break between conflicts. This requirement will limit the platforms available. The thesis will examine the current force structure, and determine its capabilities to attack targets. The requirements and ability to achieve necessary BDA and SEAD will also be examined. The thesis will then apply

the standard for parallel warfare and the capability of the force against the two scenarios.

The thesis will first examine the Persian Gulf and the conflict with Iraq, to assist in developing a baseline for parallel warfare. The current force structure capabilities will be compared to those used during Desert Storm to see if the U.S. still possesses the required force for a repeat performance in this theater, and a similar performance elsewhere.

The thesis will then address a Major Theater War (MTW) on the Korean peninsula. The North Korean infrastructure will be examined to determine the systems and targets for parallel warfare to strike. The necessary intelligence requirements will be specified, along with the ability of the current force to meet the requirements. The current force will be applied against the targets to determine the timeline the force could achieve. The timeline and targets will be compared to the Iraqi scenario to help determine the effectiveness of parallel war.

The thesis will also examine a minor regional conflict, or peace operation, in which limited military strikes might be used. A previous example of this type of operation is Operation Deliberate Force in the Bosnian theater, used to help force warring factions to the peace table. The thesis will follow the same approach as with the Korean Peninsula conflict, with special attention to limiting collateral damage.

With the standard for parallel warfare defined, the current force structure capability specified, and then applying that information to the two

scenarios, useful and supportable conclusions will be available. The thesis will thus derive the information necessary to answer the basic question.

CHAPTER 4

ANALYSIS

Introduction

Throughout the history of airpower, individuals and groups have attempted to develop a theory of airpower that would apply to uses in the future. Some have been close, some far off, but really none of the theories has been correct. Either the pace of change in technology has outstripped the theories, or vice versa. World War II saw an attempt to implement some of the ideas of Douhet and Mitchell in strategic bombing, but the accuracy was lacking. Vietnam had accuracy with the advent of laser-guided bombs, but lacked a coherent plan. Desert Storm was the first use of airpower with both the technology and the plan to be successful.

In assessing the utility of parallel warfare as a strategy for the future, a baseline must be developed to define and evaluate an approach to conducting war with respect to parallel warfare. To develop this evaluation method, the generally accepted principles of parallel warfare as explained by Warden and Deptula are used.

A Baseline For Parallel Warfare

Parallel warfare, as defined in Chapter 1, is conducting war by attacking the enemy at the strategic, operational, and tactical levels of war. Within that attack, it is desired to strike the enemies centers of gravity, decisive points,

and the systems that contain those centers as well as operate the military forces of the country.

With this definition and understanding in mind, a means to evaluate a strategy as meeting the requirements of parallel warfare may be developed. This may then be used to assess whether the strategy actually is parallel warfare, and thus enable it to be examined for future utility.

For a strategy to meet the requirements of parallel warfare, then, it must meet the following requirements. The strategy must be able to identify centers of gravity on all levels of war. The force must have the ability to locate those centers of gravity. Next, the force must be able to attack the centers, and then assess the effects achieved through battle damage assessment. The force must be able to continually apply pressure to those centers and systems to achieve the desired effect. This pressure is a critical point, as it depends on the enemies ability to recover from attack, and the aggressor's ability to maintain pressure. In an industrial based state, it is expected they will more quickly recover those assets that require some technology to repair. A non-industrial state would not have this ability, but may be able to develop alternate methods. For example, the North Vietnamese relied on footpower to transport the majority of their supplies, and attacks from the air simply forced them to walk down a different path.

This standard will provide a test for strategy, and allow the researcher to determine if the strategy is actually parallel warfare. However, this test assumes that the strategy is able to target all desired points without limitation, something not always guaranteed depending on the scenario. Often,

political considerations may limit the ability to target everything the military desires. For a full scale, total war, this test is useful. However, for a limited scale conflict, additional areas must be considered.

In a limited force scenario, the goal is not necessarily total paralysis of the enemy, rather the goal is most often to compel the enemy to an action or behavior through destruction, or control, over one or more systems, or centers of gravity.

With this in mind, how does a limited force scenario differ within the criteria previously laid out? First, centers of gravity, decisive points, and enemy systems still must be identified, located, and subject to attack. However, in this case, the ability to limit collateral damage becomes much more critical than in total war. Lastly, since a limited use of force generally seeks to compel the enemy toward some behavior, there must be a reasonable belief that the action taken will result in the behavior desired. This point is extremely difficult to achieve, and is in itself at least a thesis question of its own. For the purposes of this study, it is assumed there is some point that meets the criteria listed and will force the enemy to the behavior desired. This limitation will again be addressed in the conclusion.

With Desert Storm as the first and only test of parallel warfare on a total scale, the next step will be to examine the conduct of that war. Specifically, the systems and centers of gravity as identified by the campaign planners, the methods used to attack those targets, and the effects those attacks achieved. With this complete, examinations of how parallel warfare might apply to a North Korean and a Balkan conflict will proceed.

Desert Storm

The Commander in Chief (CINC), Central Command (CENTCOM), responsible for the Persian Gulf, had a standing plan developed for a conflict in the Gulf. Known as Operations Plan 1002-90, it was structured along classic lines of force employment¹. In the plan's scenario, an aggressive nation would act, the United States would deploy troops and other weapons into the area, and a war would ensue. The plan was very much a conventional approach to conflict, reflecting the Airland battle doctrine of the 1980's. Land forces were dominant and all other service capabilities supported the land forces. Air Force support was basically close air support to assist the battlefield commander with his ground troop plan, with interdiction as almost a totally separate entity.

With the invasion of Kuwait by Iraq in August of 1990, CENTCOM rushed a stopgap force forward to provide for defense of Saudi Arabia and to deter further aggression by Iraq. Over time, a coalition was built and force levels raised to that necessary to forcefully eject Iraq from Kuwait. Along with this buildup an air campaign was developed, a revolutionary campaign totally different from the one in Plan 1002-90.

While CENTCOM was busy deploying forces and preparing for possible war, a small group of Air Force planners within the Pentagon, under the leadership of Colonel John Warden, began developing their own approach to an air campaign. Colonel Warden believed that through selective and specific use of airpower, it might be possible to actually force Iraq to abandon Kuwait. In a division known as Checkmate, Colonel Warden and his planners developed

what they called Instant Thunder, a purposely chosen name to separate it from efforts in Vietnam and reinforce the simultaneity of action.

Through some fortunate coincidences and contacts, Warden's plan came to the attention of General Schwarzkopf, CINCCENTCOM. General Schwarzkopf was concerned over estimates that showed a traditional style ground war with Iraq would produce between 17,000 and 30,000 casualties.² With public opinion a fragile center of gravity for the United States, high casualties could very easily result in mission failure. With Instant Thunder's possibility of forcing Iraq to retreat with little or no U.S. casualties, General Schwarzkopf directed it be absorbed into CENTCOM planning. Under the guidance and supervision of General Horner, the Joint Force Air Component Commander (JFACC), Instant Thunder was modified and expanded into the plan ultimately employed during Desert Storm. This plan retained the basic structure infused by Colonel Warden, with its emphasis on attacking the five rings of the enemy and his systems to effect paralysis, as well as the force oriented flavor desired by General Horner. The final air campaign plan was built around target sets as follows³:

1. Isolate and incapacitate the regime
 - Leadership and command centers
 - electricity
 - telecommunications and command, control, communications
2. Gain and maintain air superiority
 - strategic Integrated Air Defense System (IADS)
 - Iraqi Air Forces and selected airfields
3. Destroy capacity for Nuclear, Biological, and Chemical (NBC) warfare
 - known NBC research and development, production, and storage

4. Eliminate Iraq offensive military capability
 - military production and storage
 - SCUD missiles, launches, production and storage
 - oil refining and distribution (not production)
 - Naval ports and facilities
5. Cause collapse of Iraqi Army in Kuwait
 - rail lines, bridges, roads, and lines of communications
 - Republican Guard forces

Other factors were significant in the development of the air campaign.

To illustrate this, consider the case of the war in Vietnam. Vietnam is often snidely referred to as the "Television War." Each night on network news, viewers saw footage of the battles, with graphic pictures of casualties, both military and civilian, broadcast into their homes. The American public eventually became disgusted with what they saw, and their support for the war waned. The military sought ways to limit collateral damage, that is, damage to other than military targets. This concern over collateral damage continues today.

In Desert Storm, media coverage of the war was virtually "live". Viewers tuned in at 0300, Greenwich Mean Time, 17 January 1991, actually watched the first night unfold. This direct access forced some constraints on military action. With public opinion carrying so much weight in the U.S. and the world, collateral damage had to be held to a minimum. Airpower, specifically laser-guided bombs, provided the near surgical strike capability necessary. Additionally, the forceful ejection of Iraq could not result in a significant power vacuum in the region. At the end of the war, the coalition had to leave Iraq with a defensive capability to maintain at least a status quo within the region. Specific, structured air attacks could eliminate Iraq's most

dangerous offensive forces--the Republican Guard--while leaving defensive capability intact.

With the plan structure developed and agreed upon, implementation waited only for the failure of Iraq to withdraw from Kuwait in compliance with United Nations resolutions. Their failure to do so resulted in the implementation of the air war, which began on 17 January 1991.

The Iraqi military in 1990 was one of the world's largest. Their army consisted of over one million men, with three thousand tanks. Their air force was likewise formidable, with an integrated air defense network throughout the country (see Table 1).

Table 1. Iraqi Air Force Statistics

Bases	~ 800 combat aircraft	16,000 SAMs
24 main bases	405 fighter/interceptors	- SA-2,3,6,8,Roland
30 dispersal bases	- 204 Mig-21	
	- 99 Mig-23 & 25	970 AAA sites
	- 35 Mig-29	
	- 65 Mirage F-1	
	265 ground attack	
	130 trainer/combat	

Source: Richard G. Davis, Decisive Force: Strategic Bombing in the Gulf War (Washington D.C.: U.S. Government Printing Office, 1996), 29.

The combination of airpower and SAM sites made Baghdad seven times more heavily defended than Hanoi.⁴

The integrated air defense system used by the Iraqi's was known as the Kari system. Kari was a very centralized system, with control residing solely at the top. The Kari system was anchored by an Air Defense Operating

Center (ADOC) in Baghdad, with 4 sector operating centers (SOC) underneath it in Iraq, and a fifth in Kuwait.⁵ Below each SOC were two to five Intercept Operations Centers (IOC). Information flowed strictly upward from IOC to SOC to ADOC, with no lateral sharing of information. This made the system very vulnerable to attack at key transfer nodes, which could result in isolation of the lower level centers, forcing them into unknown and unfamiliar independent operations. In fact, the IOCs might be so isolated that they were effectively removed from operation.

Important infrastructure assets in Iraq included twenty five major electrical plants. Iraqi supply lines to their forces in Kuwait relied on a single railway line and only two major highways, each of which used several bridges along their length.⁶ The Iraqi government and military command structure also followed a very centralized and dictatorial model. Power resided at the top, with little authority for independent action delegated to lower level commanders. Like the air defense network, this made the Iraqi government and leadership vulnerable to attack and isolation.

The actual execution of the air war relied on weapons systems from all the services, synchronized together to achieve desired effects. Prior to the first bomb dropping on Baghdad, Army helicopters fired missiles at air defense radars. Navy Tomahawk missiles struck electrical plants, dropping strands of metal strips over transformers to cause massive system short circuits, removing electrical power from the Iraqi air defense and command and control networks. F-117 stealth fighters, using their near invisibility to radar to sneak past air defense radars, surprised the Iraqis and dropped highly accurate laser-

guided bombs on key command and control sites within Baghdad. Numerous drones flew into Iraq, confusing IADS operators into thinking they were actual aircraft, and causing them to launch their SAMs. With SAM radars on, coalition aircraft fired over 200 HARM missiles at the sites. This massive barrage of anti-radiation missiles taught the Iraqi's to limit radar use, and resulted in a significant decrease in SAM launches for the remainder of the war. Subsequent attacks by non-stealth aircraft targeted Iraqi airfields.

The goal of day one was twofold. First, to blast a hole in the Iraqi air defense system allowing conventional, non stealthy aircraft, free entry and exit into and out of Iraqi airspace.⁷ This was achieved and remained so for the duration of the war. Second, the coalition wanted to severely limit Iraqi command and control, and it's ability to react to coalition attacks or conduct future operations. Testimony after the war proved the second effect was largely achieved, with information flow forced to motorcycle and bicycle couriers.⁸

Desert Storm provided the first test of parallel war in which the United States actually possessed the actual means to conduct it successfully. The combination of intelligence, weapons and weapon systems, stealth and deception, allowed the U.S. led coalition to conduct an air campaign of unprecedented scale and scope.

Doctrine

Is parallel warfare a strategy that can exist within current doctrine? Joint doctrine does not specifically address parallel warfare, but does cover

some of the concepts embodied with the strategy. Joint Pub (JP) 3.0, Doctrine for Joint Operations, says the goal of a force is to win quickly with as few casualties as possible. It discusses isolating key command and control nodes to cut leadership off from fielded forces. JP 3.03, Doctrine for Joint Interdiction Operations, discusses in detail the philosophy behind interdiction operations, and their planning and execution. JP 3.56.1, Command and Control for Joint Air Operations, details the command structure for joint force air forces and goes into deep detail on the planning process those forces should use. Specifically, it discusses concepts such as identifying centers of gravity, considering the desired effects against those centers, and how to strike them. While not specifically describing these concepts as belonging to parallel warfare, joint doctrine embodies the necessary principles.

Air Force doctrine has embraced parallel warfare concepts. This is no surprise, for what service would turn its back on a strategy that brought it glory in the past? Air Force Doctrine Document (AFDD) 1, the first true document of doctrine in the Air Force's history, discusses several aspects of parallel warfare. It states that airpower can strike at all levels of war simultaneously. Air superiority is a first requirement of any strategy. Lastly, of several tenets of airpower, those of precision engagement and global attack embrace the philosophy of parallel warfare.

AFDD 1 also addresses a new view of conflict that complements and relies on parallel warfare. It describes a "decisive halt" phase, in which the goal is to force the enemy to culminate through sustained overwhelming application of air and space power.⁹ During this phase, the aggressor will lose the

initiative, and his options will be more limited as his forces are slowed. At the same time, U.S. options will increase. As the enemy nears culmination, diplomatic efforts may end the conflict, or the U.S. could then continue with a counteroffensive and full scale parallel warfare. Likewise, depending on the assets required to conduct the decisive halt, the U.S. could actually begin a parallel warfare campaign during the halt phase to hasten the enemy toward culmination.

Other service's doctrine must also be examined to ensure parallel warfare supports the military as a whole. In the capstone doctrine document for the Army, Field Manual (FM) 100-5, the Army describes fundamental principles of warfare. The Army view of the goal of combined arms employment is:

"to overwhelm the enemy's ability to react by synchronizing indirect and direct fires from ground and air-based platforms. . . . The goal is to confuse, demoralize, and destroy the enemy . . . the enemy cannot comprehend what is happening; the enemy commander cannot communicate his intent nor can he coordinate his actions. The sudden and devastating impact of combined arms paralyzes the enemy's response, leaving him ripe for defeat."¹⁰

This statement shows that the Army is already embracing the fundamental concepts of parallel warfare and seeking to achieve them within its own battle areas. It is logical to infer that the Army would thus support the Air Force as it seeks to achieve parallel warfare on a larger scale.

From the previous examinations, it is apparent that parallel warfare is indeed congruent with both joint and service doctrine. It is possible to move on to analyze the remaining requirements of parallel warfare.

Force Structure

Force Structure in Desert Storm

Is parallel warfare achievable with the force structure of the present day? The force structure of U.S. airpower--all services included--in Desert Storm was a product of the Cold War, with few reductions made. It can be summarized in three categories: Air Superiority, Strike, and Suppression of Enemy Air Defenses (SEAD).

Air superiority was provided by USAF F-15Cs and Navy F-14s dedicated solely to air-to-air operations. Their mission was to prevent Iraqi aircraft from hindering Coalition air operations, through combat air patrols and escort missions. F-16s, F-15Es, F-4Gs, and F/A-18s possessed some self-defense capability, augmenting the air superiority capability of strike packages.

Strike forces include all the aircraft and missiles used to attack ground targets in theater. The most critical strike capability with respect to the implementation of parallel warfare was precision. Precision-guided munition (PGM) capability meant that one bomb, or air-to-surface missile, with an error range of less than ten feet could be used, instead of ten or more bombs with an error of thirty feet. It meant one aircraft was needed to destroy a target, not four. However, these aircraft still required a support package with air superiority and SEAD assets to deal with air and ground threats. For example, a strike package of F-15Es would normally require at least 4 F-15Cs, 2 to 4 F-4Gs, 1 EF-111, and one E-3B, at a minimum. This leads to the second most critical capability of strike aircraft: stealth. The ability of the F-117 to attack

a target, while requiring almost no other support aircraft, was a significant force multiplier. It freed up limited assets to support other packages, thus increasing the chance of survival and success for the nonstealth package.

PGMs proved both a great asset and challenge. The only aircraft capable of laser-guided bomb (LGB) delivery in Desert Storm were the F-117, F-111Fs, F-15Es, and A-6Es. The F-15Es did not receive the required equipment until after deployment to the Gulf. The A-6Es contribution was limited by the fact that the Navy had few supplies of laser-guided bombs. F-16s did not yet have the laser targeting pod necessary to designate for laser-guided weapons. Almost all strike aircraft could fire Maverick missiles, but these were primarily used against armor assets, because the warhead was not as destructive as a bomb.

Other PGM assets included B-52s firing air launched cruise missiles and Navy ships firing Tomahawk cruise missiles. Similar to stealth aircraft, these systems provided strike capability with little demand on other assets. Perhaps the only asset required would be some tactical jamming to prevent the enemy IADS from acquiring the missile in time to sound a warning. Their primary limitations were inability to react to changes real time, cost, and the available inventory. Their target had to remain in the same place from detection by intelligence sources to impact of the missile. Laser-guided bombs could be dropped on mobile targets, since the aircrew had to acquire it visually, allowing for any changes in location. Bombs were much cheaper to use than cruise missiles and more plentiful.

SEAD was provided by F-4Gs and F/A-18s shooting HARM missiles to suppress SAM sites, and EF-111 and EA-6Bs providing tactical jamming. EC-130s provided more stand-off jamming support, primarily against communications.

However, this force structure did not last. With victory in the Gulf, and the Cold War over, the U.S. military went through a significant drawdown. Several elderly systems were retired completely, others reduced up to 50 percent. Yet what remains today is actually--with respect to the ability to deliver precision munitions--a more capable force. Table 2 compares the force structure in 1990, the deployed force in Desert Storm, and the current force of 1997.

Current U.S. Force Structure

As shown in table 2, several weapons systems that were integral to the Gulf War effort are no longer on active duty. The F-4G is retired, replaced in part by HARM capable F-16s and F-18s. While these aircraft do carry HARMs, their ability to find and target different systems is not as extensive as the F-4G. All the EF-111s are also retired, their mission taken on by Navy and Marine EA-6Bs. The EA-6B does not have as broad an ability as the EF-111 as far as electronic spectrum coverage goes, but it can carry HARMs. Lastly, a significant portion of the Gulf War precision capable fleet is gone with the retirement of all F-111s and A6-Es.

Table 2. Weapon Systems Inventory Compared

Weapon System	Desert Storm ^a (17 Jan 1991)	Inventory 1990 ^b	Current Force ^c	Korea ^d
USAF AIRCRAFT				
O/A-10	144	345	367	18 (12)
AC-130	4	20	21	0
B-52	60 (Feb 1991)	187	67	0
B-1	0	90	95	0
B-2	0	0	14	0
F-15C	124 (28)	726	493	(36)
F-15E	48	77	202	(18)
F-16	246 (36)	1251	800	54
F-16 HARM	0	0	90	42
F-4G	60 (12)	99	0	0
F-111F	64	50	0	0
F-111E	18 (18)	111	0	0
EF-111	18 (6)	35	0	0
F-117	36	46	52	0
KC-135	200 (13)	591	548	15 (16)
RC-135	7	19	19	1 ^e
JSTARS	2	2	4	0
KC-10	24	57	59	0
E-3B	11 (3)	21	32	2 (2)
EC-130	6 (3)	18	27	0
US NAVY AIRCRAFT^f				
F-14	100	366	241	14
F/A-18	85	365	113	36
A-6E	95	239	0	0
A-7E	24	114	0	0
EA-6B	22	84	60	4
E-2	25	78	56	4
KA-6D	23	67	0	0

Numbers in parentheses for Desert Storm are those aircraft operated from Turkey.

a. Source: Thomas A. Keaney and Eliot A. Cohen, Revolution in Warfare? Air Power in the Persian Gulf (Annapolis, Md: Naval Institute Press, 1995), 238.

b. Source: The International Institute for Strategic Studies, The Military Balance 1990/1991 (London: Oxford University Press, 1991), 12-26.

c. Source: The International Institute for Strategic Studies, The Military Balance 1996/1997 (London: Oxford University Press, 1997), 18-27.

d. Aircraft currently stationed in South Korea and Japan. In parentheses are aircraft stationed in Alaska and Hawaii which would be available in 24-48 hours.

e. Normally, at least one RC-135 is deployed to Japan at all times.

f. Navy aircraft in Japan based on current force deployment plans.

Remaining aircraft systems have experienced some drawdown, with several squadrons closing entirely, or reducing from twenty four aircraft to eighteen. However, the precision strike capability has increased throughout the Air Force and Navy. Air Force F-16s are now equipped to guide LGBs, as are a large percentage of Navy F-14s. More F-15Es are available, and the B-2 is now operational.

Force Structure Compared

As seen in table 2, the breakdown of total strike aircraft deployed in Desert Storm was approximately 412 Air Force, 204 Navy, and 192 Marine. The Air Force number represents 27 percent of the tactical aircraft in the inventory at the time.¹¹ These are aircraft capable of direct strikes against ground targets, not including A/OA-10s or "B" series aircraft. As mentioned in Chapter 1, the Marines will be removed from consideration. Of significance is the fact that the 250 PGM capable aircraft deployed to the Gulf represented 93 percent of the entire precision capable U.S. fleet.¹²

Current force levels show that the Air Force has around 1350 strike aircraft, the Navy about 350. Of these, approximately three quarters of the Air Force aircraft are PGM capable, while the Navy has 240 F-14s PGM capable. This again does not include "B" series or A/OA-10 aircraft, although the B-2 adds tremendous capability against fixed targets.

Comparing the numbers in Desert Storm, and the current levels, it is obvious the PGM capability has increased. There are now about 1600 PGM capable aircraft in the inventory, compared to only about 270 during Desert

Storm. This is key to parallel warfare, because its targets are often hardened sites that require precise munitions to strike them. If the military deployed even half of the PGM capable aircraft to Korea, there would be almost three times the number available in Desert Storm. In addition, these aircraft are also capable of employing non precision weapons when conditions warrant.

One criticism of LGBs during the Gulf War was their vulnerability to weather and haze. The laser beams used to guide these bombs could not penetrate heavy cloud, smoke, or haze cover. In fact, through the first three weeks of the Desert Storm air campaign, over half of the attack sorties scheduled into Iraq were diverted or canceled due to weather.¹³ The military has developed new weapons that address this shortfall. Bombs guided by the Global Positioning System (GPS) are now available. These bombs are not affected by weather, and their target coordinates can be input at any time prior to release. Their primary weakness is that they require coordinates, whereas LGBs only require visual identification. Thus, while GPS bombs can attack in all weather, LGBs can attack mobile targets.

It is important to address the issue of basing these aircraft. While Desert Storm enjoyed an extremely large land mass from which these aircraft could be based, the Korean Peninsula is significantly smaller. In examining this issue, the answer to deploying large forces into theater would rely on using bases in Korea, Okinawa, and the Japanese mainland. The distances from these bases are actually less than those flown during Desert Storm, and easily supportable. Other options include operating long range aircraft from Guam,

Hawaii, or continental United States. With the forces laid out and deployed, the examination can now move on to the threat.

Conflict With the Democratic People's Republic of Korea (DPRK)

North Korean Military Forces

Is parallel warfare applicable to a major theater war in North Korea? In examining a possible conflict with North Korea and the applicability of parallel warfare to this theater, it is necessary to examine the political, military, and social infrastructure of the country. This examination will lead to the identification of systems and centers of gravity that should be attacked in the implementation of parallel warfare.

The North Korean government is an extremely centralized communist dictatorship under the control of Kim Jong-Il. A single political party exists, with dissent quickly suppressed. Freedom of expression and action are stifled.

The North Korean military follows the governmental structure. It is a tightly controlled and restricted force. Physical abuse of subordinates by superiors is common. Like most communist militaries, political officers wield significant power, and the jails are full of political prisoners. The military does not employ with much initiative. Actions are carefully considered at the highest levels before orders are passed to subordinates, who are expected to implement them without question.

The North Korean air force is modeled after the Soviet air force of the Cold War. Deeply reliant and dependent on ground controllers for direction, their pilots are capable of little independent action. Their equipment is largely

outdated, with very little offensive capability (see Table 3). Pilots average only 10-14 hours per year, a total U.S. pilots often double in a month. As a result, they are little more than robots at the controls of their aircraft, barely able to operate beyond simply staying airborne.

Table 3. DPRK Air Force Order of Battle

600 Fighter/attack	Decade Developed	Inventory
Mig-17/19	1950s	266
Mig-21	1960s	130
Mig-23	1960s	46
SU-7	1960s	18
SU-25	1980s	35
Mig-29	1980s	30
IL-28	1950s	82

Source: The International Institute for Strategic Studies, The Military Balance 1996/1997 (London: Oxford University Press, 1997), 184.

The integrated air defense system in North Korea is formidable, but less so than the one found in Iraq in 1990. Equipped with Soviet SA-2, 3, and 5 missiles, the technology is still mired in the 1960s (see Table 4). Modeled after Soviet SAM forces, the North Korean IADS continues its centralized character. Additionally, because of the age of these systems, the U.S. has had ample time to develop appropriate countermeasures.

Table 4. Surface-to-Air Missile Systems Compared

System	Iraq (Desert Storm) ^a	North Korea ^b
AAA pieces	7000	8000
SA-2	160	300
SA-3	140	36
SA-5	0	24
SA-6/8/Roland	~ 400	0

a. Source: The International Institute for Strategic Studies, The Military Balance 1989/1990 (London: Oxford University Press, 1990), 101-102.

b. Source: The International Institute for Strategic Studies, The Military Balance 1996/1997 (London: Oxford University Press, 1997), 184.

North Korea possesses perhaps the largest army in the world.

Composed of over one million men on active duty, and 4.7 million reserves, three thousand heavy tanks, and thirty divisions, the army poses a major threat to the peninsula.¹⁴

The North Korean navy, like the air force, is not a modern foe.

Consisting largely of older, smaller vessels and a few diesel submarines, the navy is not a significant threat.

The infrastructure of North Korea has continued to deteriorate over the last several years. After an attempt at lightning industrial advancement, poor planning and efficiency have taken their toll. Since 1986, industrial productivity has declined 30 percent.¹⁵ A major contributor to this decline is the poor electrical production from North Korea's thermoelectric plants. Estimates place the six major plants production at barely 50 percent of the country's requirements.¹⁶

The food crisis in North Korea is well known. What is not well known is the actual extent of the problem. While there are occasional accusations that

the crisis is largely a contrived story by the DPRK government to gain international assistance and concessions, the majority of sources both internal and external support the fact that the food shortage is all too real. The result of poor planning and natural disasters, grain production is estimated to be 60 percent of requirements.¹⁷

Lastly, North Korean oil supplies are very short. After massive flooding in 1994, the pipelines supplying the majority of oil were washed away. They have been largely unable to find an alternate source. As a result, military training has been curtailed, and transportation reduced.¹⁸ Despite evidence that the DPRK has been stockpiling food, ammunition, and fuel, it is likely any offensive action on their part would demand a short war, lest they run out of supplies. Similarly, locating these stockpiles and interdicting them would be a key goal of parallel war.

War in North Korea

Several authors, both military and civilian have developed scenarios for a war in North Korea. Since none of these writers is privy to the future, they may be completely incorrect, partially correct, or one might be perfectly correct. This thesis will describe what is, at best, a melding of opinion into something of a consensus as to what a war with North Korea might be like. In any case, the systems behind the DPRK forces remain the same regardless of the method of their use.

It is likely that there will be some warning prior to an actual North Korean invasion. Despite the massive forces the North has positioned at the

demilitarized zone (DMZ), a buildup will most likely be detected, resulting in a heightened posture of U.S.-ROK forces and perhaps deployment of additional forces. However, as it is unlikely the ROK or U.S. would launch a preemptive strike into the North, the North will attack first and begin a conflict with the initiative. Unlike Desert Storm, the air and ground war in Korea will begin simultaneously and run concurrently.

Terrain on the Korean peninsula is different than the desert of the Middle East. In the east and central regions, Korea is very mountainous and wooded. In the west, the terrain is characterized by gently rolling hills. Seoul, the capital of South Korea, is within twenty five miles of the DMZ. These geographical considerations have a tremendous impact on the ability of an attacking force to move toward its objective, and a complementing impact on the defender's ability to repel.

It is expected the North Koreans would mount a massive attack across the DMZ supported by armor where possible. They would flow through the natural avenues of approach, used in the first Korean war in 1950. The North Korean strategy would be limited territorial.¹⁹ Translated, that means they would likely encircle Seoul and then sue for peace. North Korean special operations forces (SOF) would infiltrate the south, attacking airbases and ground forces to infuse confusion and reduce capability.

North Korea would not use biological weapons due to the length of time involved for the effects to be realized. However, chemical weapons might be used to achieve gains where extra force is necessary.

North Korea air forces would be limited in use. The most capable aircraft, the Mig-29, would likely be held for defense of the capital. Air defense aircraft, the most capable of which is the 1960s vintage Mig-23, would be used for point defense or strip alert. Significantly inferior to U.S. and ROK fighters, the greatest threat posed by these air defense aircraft is simply their large numbers. Ground attack aircraft most likely will attempt to strike forces near the DMZ. However, due to their short combat radius, these aircraft would not be able to reach targets in the southern half of the peninsula. Small transport aircraft would be used to infiltrate SOF troops into South Korea. These small transports pose the greatest threat to South Korea. Their ability to fly low and slow, using terrain masking to avoid detection, may allow them to reach deep into the peninsula.

Significantly outgunned by U.S. warships, the North Korean Navy would not be a significant force, and is likely to stay in coastal defense. However, as evidenced by the beaching of the North Korean submarine in 1996, the DPRK will try to use this method as another means to infiltrate SOF troops.

The North Korean SOF threat is significant. Estimates place their numbers at around 80,000, with open speculation that many of these troops are already living in South Korea. These infiltrators have integrated themselves into society, and are merely waiting for the call to action. Similarly, the ability of SOF troops to evade and hide for long periods of time was shown when it took weeks to find the last remaining escapees from the submarine incident.

In sum, an attack by North Korea would likely be launched along the familiar avenues of approach in the western area, with simultaneous SOF attacks on key facilities in the South to spread confusion. The North Korea plan would be a high speed charge to encircle Seoul and sue for peace. The Air Force and Navy would pose primarily an annoying threat, not a capable threat. With their probable gameplan in mind, we can then move on to develop a response using parallel warfare.

Parallel Warfare Applied to North Korea

The North Korean's will start off with the initiative. They will have ground forces actively moving to engage U.S. and ROK coalition forces. Thus the air and ground war will begin simultaneously. This will necessitate some consideration when allocating airpower to various targets.

Any allied plan based on the concepts of parallel warfare must focus on halting the ground force while simultaneously attacking the strategic, operational, and tactical centers of gravity. In so doing, the coalition goal would be for the tactical fight between their troops and the DPRK's to stalemate, or turn to the coalition's favor, and the ability of the DPRK command structure to react to changes in the battle will be diminished.

The Halt Phase

The halt phase of the war would rely on U.S. and Republic of Korea (ROK) ground forces already stationed and positioned on the peninsula. In addition, air and space power assets would be called upon to help stop the

North Korean advance. Precision munition capable aircraft would engage armored forces and prevent further advance. Other aircraft would be employed against infantry where possible, augmenting surface forces in their efforts to stop the advance. At the same time, remaining aircraft sorties would be employed in the first phase of the parallel warfare campaign, working to degrade and ultimately cut off the command and control of fielded forces, as well as the other target sets. As the enemy is halted, more assets will be released to the parallel warfare campaign.

Strategic and Operational Attack

The air campaign employed against North Korea would share some similarities with the one employed in Desert Storm. First, the integrated air defense system of North Korea must be negated, either through destruction of sites or removal of their ability to target aircraft. Next the coalition must deny or destroy North Korean command, control, and communication capabilities, and remove the ability of the political and military leadership to control their forces. They must deny the resupply and mobility of the fielded ground troops, preventing the commitment of reserves. Lastly, the coalition must destroy what ground forces they can.

In his paper on considerations for going to war with North Korea, J. Edwin Clark cites a Department of Defense study as saying the number of targets in North Korea are about four times greater than in Iraq during the Gulf war.²⁰ However, the number of targets is not necessarily meaningful. As mentioned before, if the objective is to deny command and control, it is not

necessary to destroy every site. Rather, it is necessary to find key nodes, the destruction or damage of which would result in denial of their use and contribution to the whole system. So the development of a parallel strategy for North Korea is not simply a matter of counting targets, weapons systems, and time. It relies on finding those key nodes and points to target, and then determining if they are vulnerable. For the purposes of this thesis, it will suffice to identify that these nodes exist, and not address classified means to locate them.

North Korea is very similar to Iraq in command structure, and military forces. Both are very centrally controlled, with the North Korean system characterized as more regimented than any other communist system in history.²¹ North Korea's military follows the basic communist structure, as did Iraq's. Additionally, the majority of systems employed are Soviet designed. Thus, an air campaign plan similar to the one employed in Desert Storm would be effective in North Korea.

Command, control, and communication (C3), and the ability of the DPRK leadership to direct forces, would be a primary target. It is known that all C3 lines meet in the hands of Kim Jong-Il. The North Korea wartime operations command post is located in a bunker about 100 meters below the Sosong district of Pyongyang.²² All operations in war will be directed from this bunker. Additionally, this bunker is connected via tunnels to several other locations in the capital. the fact that this important facility is known at an unclassified level implies that information on a classified level is more detailed and precise. According to Desmond Ball, a signals intelligence expert for Jane's

Intelligence Review, the bulk of North Korea C3 is vulnerable to precision strike.²³

Besides actual destruction of C3, targeting the power generation and distribution facilities in North Korea will severely hinder not only C3, but other activities, such as air defense. The majority of the DPRK's electrical power is supplied by only six plants, easily targeted by cruise missiles or other PGMs.²⁴ DPRK fuel refineries and pipelines would also be subject to the same types of attacks.

The North Korean SAM force and air force would also be prime targets in the early stages. North Korean SAMs are fixed systems, with very poor mobility. The SA-5 has the longest range, threatening far enough into South Korea to force AWACS and tankers to operate further south. These sites would be first to go, with cruise missile or F-117 strikes most likely. The SA-2 sites are more numerous than the SA-3. Similar to Desert Storm, a hole would be blown through these defenses by attacking a section with PGMs and HARMs. Due to the poor mobility of these SAMs, the lack of excellent HARM platforms is offset by the ability to locate the sites and attack them with PGMs. The lower number of tactical electronic jamming systems, specifically the EA-6B, is offset by the limited frontage presented in North Korea. Rather than a thousand mile wide front in Iraq, the Korean peninsula is only 100 miles wide.

The North Korean air force operates from thirteen major airfields, with several dispersal sites available. These fields are well known to intelligence sources today, as are the dispersal sites most often used in training. They

would be targets in the early phase in the U.S. campaign for air supremacy. The runways make excellent targets for GPS equipped bombs, since they are fixed structures and cannot move. As discussed earlier, North Korea aircraft do not pose a major offensive threat to U.S. aircraft. Limited to weapons ranges of less than two to three miles, the North Koreans must rely on safety in numbers. Coupled with the destruction of ground control sites, the North Korean fighter defenses would struggle to repel any air attack. It is likely they might achieve a few kills before their air force is almost totally shut down, but will not be capable of mounting a significant defense.

The destruction, or removal from operation, of the air defense system, and C3 capabilities, would give the U.S. virtual air supremacy over North Korea. The remaining threat would be from numerous Anti Aircraft Artillery (AAA) and shoulder launched SAMs, similar to what remained in Iraq. This would force aircraft to remain above a sanctuary altitude, something that has been part of basic tactics since Desert Storm, and would negate the effect of these defenses.

Of significant concern is the North Korean Nuclear, Biological, and Chemical (NBC) weapons. In an article in Jane's Intelligence Review in August 1996, Joseph Bermudez, Jr., describes the North's chemical warfare infrastructure.²⁵ He identifies the major factories and storage facilities, as well as the methods of transporting the weapons. The major strategic storage facilities at Maram and Chiha-ri consist of underground storage tunnels in the mountains. From there, weapons are shipped to corps depots. The location of the major storage sites is known at the unclassified level, and it is reasonable

to assume the corps weapons depots are also known, at least on the classified level. As such, these sites are vulnerable to air attack. Some of the new weapons now available to U.S. forces would be ideally suited for these locations. The Joint Stand-Off Weapon (JSOW) is basically a bomb with wings. It can glide up to sixty miles from launch. This bomb could achieve the flat trajectory needed to enter the mouth of a tunnel and penetrate deep enough to cause the desired effect. As in Desert Storm, the attack would probably begin with explosive bombs followed by incendiary bombs to start fires and burn off remaining chemicals.

These attacks would likely destroy stored assets, but it is also likely the North would have Chemical Warfare (CW) weapons located with tactical troops. As such, it is probable the North Koreans would use CW weapons to assist their lightning attack. The ability of the North's forces to operate in a chemical environment is much disputed. Some sources believe their chemical protection and decontamination equipment is in short supply, while others believe it is more than adequate.²⁶ Fortunately, both the U.S. and ROK troops are extensively trained in CW operations and well equipped. While the use of chemicals by the North would cause initial confusion and gains, it is reasonable to expect after the initial gains both sides would be slowed similarly.

Through this systematic examination of the North's assets and defenses, and the ability of the U.S. to attack, it appears the strategy is valid. With air supremacy, the U.S. can employ more vulnerable assets to further assist in the campaign. Aircraft such as the B-52, B-1, and B-2 can deliver crushing amounts of ordnance on relatively static targets such as second

echelon forces, supply nodes, and the like. Fighters, using some of the new weapons, such as the sensor-fuzed weapon, can achieve excellent results against armor assets even through weather. The close fight will rely on A/O-10s and helicopters to assist the ROK and U.S. ground forces. In any case, the prosecution of the ground war appears to benefit more from the application of a parallel strategy, than simply an Airland battle approach where air supremacy is not guaranteed.

Low Intensity Conflict

Is parallel warfare applicable to a small regional conflict, such as the Balkans? In examining the limited force scenario, the initial approach is roughly the same as a full-scale war. The enemy centers of gravity, decisive points, and systems must be located in order to determine value to the enemy. The facilities near those targets must be examined to determine their value to the enemy, and the potential political and public opinion ramifications of the destruction of those facilities likewise determined. With the near surgical capability of PGMs, collateral damage can be minimized or even prevented.

In a paper entitled "Airpower and Peace Enforcement," James Corum describes in detail the use of airpower in just such a scenario. Citing differing definitions, he categorizes peace enforcement as actions to either separate belligerents forcefully, or actions to prevent a cease fire from being violated.²⁷ As tools to accomplish peace enforcement, Corum does not limit the assets to combat airpower. He includes airlift, psychological operations (psyops), reconnaissance, and surveillance.²⁸

An important point in Corum's paper is that while targeting the enemy in war does not require great political sophistication, targeting in peace enforcement is deeply entwined with political concerns.²⁹ As such, it is important that a balanced approach be used. PSYOPS and airlift can be combined to show our support for one side or another. Intelligence relies more on human sources (HUMINT) to identify the threat and the key points where pressure may be applied. Lastly, he states that in Deliberate Force, while the bombing was an important part of the campaign to coerce the Serbs into a truce, diplomatic and economic instruments were used as well.³⁰ As such, airpower was merely one piece of a larger attack.

Corum's last point is perhaps his most poignant. He states it is likely that "even a massive application of force would probably never compel a significant number of people in Yugoslavia to live under a multiethnic government."³¹ This applies to the majority of probable peace enforcement scenarios. Civil wars are often the reason for peace enforcement operations, and application of force is not likely to solve the grievance. However, it may be enough to bring the factions to the peace table.

Other works on Air Force operations in peace enforcement also stress the totality of the effort. The RAND Corporation study "Preparing the U.S. Air Force For Military Operations Other Than War," examines in great detail operations of the past, and several scenarios for the future. In each future scenario, several different elements are combined with or without destructive force to achieve a goal.

The evidence shows that airpower's destructive force has a place in peace enforcement. It is critical that the goals be laid out, constraints explained, and effects determined.

Cost and Time

Is parallel warfare useful as an overall strategy in terms of cost and time? This is a more subjective question to answer. First, the weapons used will be addressed. In the Gulf War, the primary weapon of parallel warfare was the laser-guided bomb. At an average cost, in fiscal year 1990 dollars, of approximately \$80,000, LGBs were relatively inexpensive. The Tomahawk missiles cost \$1.1 million each, and the Air Launched cruise missiles \$1.5 million. Numerous Maverick missiles were also used, at an average cost around \$100,000 each.

The dollar amounts are interesting, but difficult to relate to the overall discussion of cost. The real factor in cost is the possible loss of American, or coalition, lives. In a major theater war, this is perhaps the most important driving factor. In Desert Storm, General Schwarzkopf was concerned over initial projections that estimated Coalition losses at 17,000 troops. His answer was to embrace the air campaign developed by Checkmate, and its promise of minimizing loss of life. With this in mind, and also reflecting on the massive public outcry that follows any loss of American servicemen's lives, it is logical to assume that a strategy which reduces the number of lives placed in danger is a worthwhile one.

With respect to time, parallel warfare may actually be more useful than the old standard serial warfare. World opinion seems to be more and more oriented against any use of force. The episode with Iraq in late 1997 and early 1998 over access to inspection sites showed that despite flagrant violation of UN sanctions, the world prefers diplomatic efforts to any use of force. The United States cannot operate in a vacuum, and must respect world opinion. Parallel warfare, especially when delivered by airpower, enables the U.S. to begin a campaign, while still able to work through diplomatic and economic channels to seek an end to the conflict. Parallel warfare is very easy to turn on and off. It does not require a massive deployment of ground troops, and can avoid the heightened tensions that accompany the presence of a large ground force.

Parallel warfare is a strategy that can start almost immediately. If the North Koreans cross the demilitarized zone, airstrikes can begin immediately. Ground troops stationed on the peninsula would also enter the war immediately. However, ground reinforcements would take a significant amount of time to arrive with troops and equipment. Airpower reinforcements could arrive in just a few days, if that long. The parallel campaign would continue while ground troops prepared to deploy. Through the decisive halt phase, and parallel warfare, the campaign could even be brought to an end before the ground troop reinforcements arrive. If not, then parallel warfare could continue to bring the enemy to culmination. The ground force would then have a much smaller fight to deal with, and the loss of life will be less.

Summary

The analysis was accomplished in phases. First, a standard for parallel warfare was defined using the experience gained from Desert Storm. Military doctrine was examined to assess the correctness of parallel warfare. The force structure of Desert Storm, and the current structure, were compared to determine if any shortfalls existed. The concept of parallel warfare was applied to a conflict on the Korean peninsula to determine its utility. Next, the idea of parallel warfare was applied to a peace enforcement scenario. Finally, parallel warfare was examined with respect to cost and time. It appears parallel warfare is a viable strategy for future operations, within certain limitations.

¹ Thomas A. Keaney and Eliot A. Cohen, Revolution in Warfare? Air Power in the Persian Gulf (Annapolis, Md: Naval Institute Press, 1995), 24.

² Richard P. Hallion, Storm Over Iraq (Washington, D.C.: Smithsonian Institution Press, 1992), 19.

³ Conduct of the Persian Gulf War (Washington, D.C.: U.S. Government Printing Office, 1993), 91-92.

⁴ Richard G. Davis, Decisive Force: Strategic Bombing in the Gulf War (Washington, D.C.: U.S. Government Printing Office, 1996), 29.

⁵ Ibid, 30.

⁶ Keaney, 82.

⁷ Davis, 30.

⁸ Ibid, 53.

⁹ U.S. Air Force, AFDD 1, Air Force Basic Doctrine (Maxwell AFB, Al: Air Force Doctrine Center, 1997), 42.

¹⁰ U.S. Army, Field Manual 100-5, Operations (Washington, D.C.: Department of the Army, 1993), 2-3.

¹¹ Davis, 28.

¹² Ibid, 21.

¹³ Keaney, 14.

¹⁴ Charles O. Sylling, "Air Campaign For Second Korean War: A Strategy For Attacking the Centers of Gravity" (Naval War College Thesis, Newport, R.I., 1992), 3.

¹⁵ Eric Croddy, "Chuche: The Political Economy of the Democratic People's Republic of Korea" *Jane's Intelligence Review* 8, no. 6 (June 1996), 272.

¹⁶ Ibid., 272.

¹⁷ Ibid., 273.

¹⁸ Ibid., 274.

¹⁹ Sylling, 5.

²⁰ J. Edwin Clarke, "North Korea: Considerations For Going to War And the Use of Weapons of Mass Destruction" (Naval War College Thesis, Newport, R.I., 1994), 3.

²¹ Desmond Ball, "Signals Intelligence in North Korea" *Jane's Intelligence Review* 8, no. 1 (January 1996), 28.

²² Ibid., 29.

²³ Ibid., 33.

²⁴ Croddy, 272.

²⁵ Joseph Bermudez, Jr., "Inside North Korea's CW Infrastructure" *Jane's Intelligence Review* 8, no. 8 (August 1996), 378.

²⁶ Ibid., 382.

²⁷ James S. Corum, "Airpower and Peace Enforcement" *Airpower Journal* 10, no. 4 (Winter 1996), 10.

²⁸ Ibid., 11.

²⁹ Ibid., 13.

³⁰ Ibid., 23.

³¹ Ibid, 24.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This thesis sought to answer the question, "Is parallel warfare a viable strategy for the future, or was it a one time tactic used in Desert Storm?"

Although it appears further research will be required to develop the actual campaign plans that should be in place prior to a conflict, it seems apparent that parallel warfare is not only a theory of the past, but also a strategy for the future.

The first step in the analysis of the data was an attempt to develop a baseline from which to examine parallel warfare by using the example set in Desert Storm. However, this proved to be a most difficult task, as parallel warfare seeks to target intangible items, as well as tangible ones. Rather than develop a cookbook approach, similar to $2 + 2 = 4$, the baseline evolved somewhat differently. In the case of parallel warfare, the baseline is both concrete with respect to destruction of tangible targets, and speculative with respect to intangible targets. The intangible targets are areas such as the synergistic effects achieved by removing selected portions of command and control systems.

There is a possibility of error here. In much the same way as the Nazi's were wrong in World War II when they sought to defeat the British through terror bombing of their cities, a strategy that attempts to target feelings, will,

or reaction of human beings is not based on concrete evidence. Rather, it is based on opinion, and opinion can be wrong.

In developing the baseline, the limitation of maintaining the thesis at an unclassified level resulted in a rather broad look at a theater. In order to truly determine the requirements for parallel warfare as it would actually occur, detailed campaign analysis of the theater must be conducted. Using highly classified information about the enemy systems, infrastructure, command relationships, and target locations, the available assets can be applied to those points. Then a timeline can be developed, and judgment made with regard to whether enough force can be brought to bear in a short enough time to achieve parallel warfare. However, this thesis did not seek to create a campaign plan. The limitation of an unclassified study does not degrade the research, in that the information available at that level is accurate enough to support the analysis.

The primary lesson learned by the research is that a centralized state which controls from the very top with little side initiative allowed, is vulnerable to parallel warfare. Likewise, an industrial state that depends on factories and infrastructure to support its efforts is vulnerable. The centralized state relies on control and guidance from a central figure or committee at the top of the control chain. Thus the number of command nodes emanating from this single point are more easily found, and cut off. By allowing little or no side initiative, lower level commanders are not accustomed to making decisions, and when the guidance from above is removed, they are reluctant to act as the situation requires. An industrial state with a modern military machine relies on roads,

rail, and other fixed objects to move and position forces. These are easy targets for parallel warfare, and their vulnerability makes parallel warfare a viable option.

It is also apparent from the research that a nonindustrialized state, or one with no central control, may not be as vulnerable to parallel warfare. An example of this would be an insurgent or guerrilla type war. In order to resolve these types of conflicts, it is generally a requirement to eradicate the insurgent troops by killing them all, or by removing their support base. In either case, parallel warfare of a destructive mode may not work due to the diversity of the targets, and the difficulty inherent in locating them. A possible answer would be a non-destructive use of parallel warfare. In this case, rather than destroy targets, parallel warfare could be used to erode the support base of the insurgents. By bringing in necessary supplies, employing psychological operations, or filling whatever void the people have that the insurgents claim to fill, the legitimate government might be able to cut the insurgents from their support base. However, this does relate back to the portion of parallel warfare that seeks to target intangibles. This nondestructive use of parallel warfare would require significant local area intelligence to ensure the efforts were targeted correctly. This is an area for further analysis.

Another case where parallel warfare may experience limitations is that of a large industrial state with many spokes and rings around its center. In this case, the target base may simply be too large for the force available to target in the short time span necessary to achieve synergistic effects. A possible case that supports this could be China. With such a large nation, and

vastly spread out infrastructure, the United States might not have enough resources to make parallel warfare successful.

These cases are parallel warfare on a large scale. The other area examined was the applicability of parallel warfare to a low intensity conflict, such as the current Balkan situation. In this case, parallel warfare is even less tangible than the previous cases. Similar to an insurgent conflict, the specific goal to be achieved must be very well defined. Only then can airpower experts gather the required intelligence on targets, public opinion, governmental resolve, and the like, which will be necessary in order to determine what target will gain the desired result. There is always the danger of our own perceptions clouding our judgment, resulting in failure in this case. Parallel warfare is applicable to a low intensity conflict or peace enforcement, but the destructive effects should be a last resort, used only when all other means fail. In addition, we must remember the pain threshold of the targeted government or people is not determined until they actually exceed it, and our attempt to define it beforehand is merely educated guesswork.

Throughout the research and analysis of this thesis, it became apparent that parallel warfare was not a new strategy developed by John Warden in the late 1980's. Rather, it was a strategy whose first parts were expressed by Giulio Douhet, again by Billy Mitchell, Alexander de Seversky, and other airpower theorists who have argued about employment of the airplane since the Wright Brother's first flight. It was not until Desert Storm that an Air Force, and other services in contribution, possessed the capability to actually strike targets with such precision that parallel warfare became achievable.

Throughout this thesis, a structured approach was followed to examine the future applicability of parallel warfare. Parallel warfare is consistent with military doctrine, both at the Joint level and at the service level. In addition, it meshes not only with Air Force doctrine, but also the doctrine of the other services. It is interesting to note that as the Army develops Force 21, and the Army After Next, they are also seeking for ways to employ parallel warfare. Their current vision of the Army After Next is based on employing small units that would strike the enemy simultaneously at several different locations. using high speed transport, the Army would move from place to place, always acting within the enemy's Orient, Observe, Detect, and Assess (OODA) loop. This is parallel warfare with different vehicles.

Parallel warfare also fits in the historical and theoretical framework built before and after its use. It creates fog and friction for the enemy, developing openings for U.S. forces to exploit. It allows a U.S. force to get within the enemy's OODA loop, thus allowing the force to move before the enemy can even react to the force's previous move. This will allow the force to mass at the decisive point and time so that it may overwhelm the enemy. Parallel warfare allows a force to bypass fielded troops to strike directly at the decisive points and center of gravity, while limiting the number of troops placed in harms way.

Is parallel warfare a viable strategy for the future? Absolutely! The U.S. military now possesses the means to execute airpower in the manner in which it excels, while limiting the number of human lives placed within the enemy threat capabilities. It requires excellent intelligence, study, and

dedication, and the vision to truly believe it is no longer necessary to work through enemy defenses to achieve our goals. The United States can bypass the unnecessary, and concentrate on the true objectives to achieve our goals.

Recommendations

Parallel warfare has proven its value as a strategy. However, the intelligence and planning requirements are significant. It is unlikely an enemy will give the U.S. six months to plan a campaign like the Iraqi's did. Therefore, in depth campaign analysis must occur now for each of the postulated Major Theater wars so the U.S. will be ready to act on short notice.

Further, joint doctrine must be written to specifically embrace the concept of parallel warfare and describe the intent of it as a strategy. This will ensure all commanders are aware of the tools available to them as they seek to achieve military goals in varied and different environments.

Suggestions for Further Study

While researching this thesis, several areas were identified as candidates for further study. As inferred earlier, one area that requires further study is the prediction of intangible effects. Prior to Desert Storm, the majority of information about the effects of attack on the will or ability of the human being to continue to function was based simply on the author's own opinion. There was very little academic or scientific study information. After the Gulf War, a few studies and books have attempted to grapple with the issue, relying primarily on Iraqi prisoner reports. In order to accurately predict

the reaction to various actions, indepth study and analysis of the situation and conditions must be conducted so a more accurate campaign plan is developed. Lacking that, at a minimum the inability to determine these reactions must be proven so a campaign plan can be developed with inherent flexibility.

Another area for study concerns the intelligence information that parallel warfare requires. As mentioned previously, parallel warfare benefits from, and for the most part requires, precision munitions. Precision munitions are capable of precisely hitting what they are aimed at. In the case of laser guided weapons, the aircraft delivering them can compensate for some errors in target location by visually acquiring the target and ensuring the laser beam is on the correct spot. In the case of GPS or inertial navigation weapons, such as Tomahawk missiles or the JSOW bomb, this is not the case. These weapons will precisely hit their target coordinates. If the coordinates are wrong, the weapons will precisely miss the target. With the retirement of the majority of tactical reconnaissance systems, the military relies on strategic sensors. There was significant controversy during the Gulf War between the operators delivering weapons and the intelligence community that provided target locations. To ensure the viability of parallel warfare in the future, the ability to collect adequate information, and provide that information to the user must be validated. Through further study and exercises this interface can be verified.

A final area for further study is battle damage assessment (BDA). Parallel warfare relies in part on repeated strikes where necessary to keep the enemy off-balance and deny the enemy from using critical systems. If BDA is

lacking, the U.S. may either fail to strike when necessary, or strike when not necessary. Again, BDA suffers from a lack of tactical reconnaissance systems. An in-depth analysis of the ability of strategic sensors, as well as post strike video tape analysis, to provide sufficient BDA is required. In addition, the methods used to classify targets must be examined to ensure the intelligence sources are classifying damage to structures in harmony with the effects parallel warfare seeks to achieve, rather than just “destroyed” or “not destroyed”.

APPENDIX A

WEAPON SYSTEMS DESCRIPTIONS

Aircraft

1st generation, 2d generation, etc., refers to the level of development and advancement of jet aircraft. These are commonly accepted means of classifying combat jet aircraft, and reflect the general capability of the aircraft.

First generation aircraft were designed for day, clear weather operations and armed only with guns. Second generation fighters were day or night all weather capable with some rudimentary radar capability, armed with guns and very basic air to air missiles. Third generation aircraft advanced to credible day or night, all weather capability with improved radar capable of limited forward hemisphere engagement. Fourth generation aircraft possess significantly improved radar and missiles capable of unlimited forward hemisphere engagement.

Mig-17/19 and Chinese J-5/J-6: (1st generation) Day, clear weather only. Equipped with guns. Extremely limited capability, it can only attack from the rear hemisphere.

Mig-21 and Chinese F-7: (2d Generation) Limited all weather capable air to air and air to ground fighter, initially introduced in 1959. Equipped with a very short range radar, it is armed with a 23mm cannon, and 2 AA-2 air to air missiles. It can only attack from the rear hemisphere. It can carry 1000kg of bombs. Combat radius is less than 200 nautical miles (NM).

Mig-23: (3d Generation) All weather, look down shootdown capable fighter deployed in the late 1960's. Equipped with a limited capability radar, it is armed with a 23mm cannon, AA-2, and AA-7 missiles. It can attack from forward and rear hemisphere's. Combat radius is 350NM.

Mig-29: (4th Generation) All weather look down shootdown capable fighter. Equipped with a pulse-doppler radar, it is armed with a 23mm cannon, AA-2, AA-10, or AA-11 missiles. It can attack from forward and rear hemisphere's. Combat radius is approximately 300NM.

SU-7: (3d Generation) Ground attack fighter with no air to air capability. It is equipped with 2 23mm cannon, bombs, and has a combat radius of 260NM or less.

SU-25: (4th Generation) Ground attack fighter designed for close air support of troops. It has no radar, a 30 mm cannon, and can carry very short range air to air missiles for self defense.

F-4: (3d Generation) Designed in the late 1950's and fielded through the 1960's and 1970's, the F-4 has limited ability to engage targets in the forward hemisphere.

F-15C: (4th Generation) All weather lookdown, shootdown capable fighter. Equipped with a pulse-doppler radar, it is armed with a 20mm cannon, AIM-9, AIM-7, and AIM-120 missiles. Extremely capable air to air fighter, it can engage targets from all hemisphere's, with a combat radius is around 500NM.

F-15E: (4th Generation) Long range interdiction version of the F-15, it retains all capabilities of the F-15C.

F-16: (4th Generation) All weather multi-purpose fighter, it is equipped with a 20mm cannon, AIM-9, and AIM-120 missiles, as well as various air to ground weapons. Extremely capable fighter, it can engage targets from all hemisphere's, with a combat radius around 400NM.

F-111: Long range interdiction, with only air to ground capability. All F-111's in the U.S. inventory are retired.

EF-111: Tactical jamming platform, the last EF-111 will be retired in 1998.

A-6E: U.S. Navy interdiction aircraft with only air to ground capability. All A-6E's in the U.S. inventory are retired.

EA-6B: Tactical jamming aircraft, they are now joint use among all services, replacing the EF-111 of the USAF.

F-14: (3d/4th Generation) All weather multi purpose fighter, equipped with a 20mm cannon, AIM-9, AIM-7, AIM-120, and AIM-54 missiles. Originally designed for fleet defense, the F-14 has been modified to deliver air to ground weapons. It can engage targets from all hemisphere's.

F-18: (4th Generation) All weather multi-purpose fighter equipped with 20mm cannon, AIM-9, AIM-7, and AIM-120 missiles, as well as various air to ground weapons. Extremely capable fighter, it can engage targets from all hemisphere's, with a combat radius around 400NM.

E-3B: (AWACS) Airborne warning and control aircraft based on a Boeing 707 aircraft, it orbits near the battle area providing detection and guidance to other aircraft and surface systems.

Air to Air Missiles

AA-2: Infra-red guided air to air missile with a range of 1-2NM in the rear hemisphere.

AA-7: Semi active radar guided air to air missile capable of forward and rear hemisphere attacks. It has a maximum range of 12NM in the forward hemisphere.

AIM-7: Semi active radar guided missile capable of forward and rear hemisphere attacks. It has a maximum range of approximately 28NM.

AIM-9: Infra-red guided missile capable of forward and rear hemisphere attacks. It has a maximum range of 5NM.

AIM-54: Active radar missile capable of forward and rear hemisphere attacks. Designed for fleet defense against large aircraft. Only carried by the F-14.

AIM-120: Active radar missile, meaning it does not require support from the launch aircraft after firing. Capable of forward and rear hemisphere attacks up to a maximum range of approximately 32NM.

Surface to Air Missiles

SA-2: Surface to Air missile system developed in 1950's. It has a range of 25NM, up to 60,000 feet, with a 280lb warhead.

SA-3: Surface to Air missile system introduced in the mid-1960's. It has a range of approximately 22NM, up to 50,000 feet, with a 130lb warhead.

SA-5: Surface to Air missile system introduced in the 1970's. It is designed for use against large targets, such as AWACS, and has limited capability against fighter size targets. It has a minimum range of 40NM, a maximum range of 140NM, up to 70,000 feet, with a very large warhead (specific size unknown).

SA-6: Surface to Air missile system introduced in the 1970's. It has a range of 20NM, up to 42,000 feet, with a 170lb warhead.

SA-8: Surface to Air missile system introduced in the 1980's. It has a range of 8NM, up to 10,000 feet, with a 40lb warhead.

ROLAND: Surface to Air missiles system. It has a range of 5NM, up to 15,000 feet, with a 20lb warhead.

Air to Surface Munitions

JSOW: Joint Stand-Off Weapon, is effectively a glide bomb. It is launched from the aircraft, and then glides up to 50 kilometers. It can carry bomblets or a conventional warhead.

JDAM: Joint Direct Attack Munition, is a GPS aided guidance kit that can be fitted on MK-83, MK-84, and BLU-109 bombs. Expected circular error probable of 10-15 meters.

SFW: Sensor Fuzed Weapon, is a semi-smart cluster bomb capable of destroying tanks. It deploys several bomblets, each with four Skeet projectile warheads. These projectiles seek the IR energy of a tank engine, and fire their warhead into the engine area, stopping the tank.

WCMD: Wind Corrected Munitions Dispenser, it is essentially a GPS tail kit that attaches to a standard bomb. It allows the bomb to use the GPS navigation system for guidance, instead of relying on a laser beam. The bomb can then strike through weather or haze at a known point.

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